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PAPILLARY ŒDEMATOUS NASAL POLYPI AND THEIR RELATION TO ADENOMATA.*

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Billroth, in his classical work, *Ueber den Bau der Schleimpolypen*, in 1855, reported two cases of nasal tumor to which he gave the name of *Zottenkrebs*. One sprang from the middle turbinated bone among a mass of œdematous polypi. It was removed and recurred, and finally resulted fatally. In the other case the growth sprang from the inferior turbinated body. It passed from his observation, but he regarded it as belonging to the same category as that of the first case. In the light of our present knowledge of such cases as the latter we may be allowed to conjecture that it was a papillary hypertrophy of the inferior turbinated body. The reasons for this surmise will appear later in the course of this article. Hopmann (1), in his well-known paper on Papilloma of the Nose, gave a careful description of a papillary growth of the middle turbinated bone and re-

* Read before the American Laryngological Association at its nineteenth annual congress.

ferred to a similar one by Michel, which they both called an epithelioma papillare, but Hopmann hastens to say that he regarded his own growth as of a benign character. In another paper (2) I have had occasion to remark upon the confusing nomenclature introduced into rhinological literature by Hopmann in describing nasal growths, and I may add that in this instance it certainly seems unwise to give the name of epithelioma to a benign growth. Hopmann's case was also associated with œdematous growths. Zarniko (3) reported a similar case in a man of fifty years under the name fibroma of the nasopharynx, of a peculiar shape and structure; but it evidently had its origin in the region of the middle turbinated bone among œdematous growths. Again, a year later, Kiesselbach (4) reported a case, and adopted Hopmann's classification of a benign epithelioma papillare.

Several years ago I examined microscopically a growth removed by Dr. Charles H. Knight, of New York, from the middle turbinated bone of a man of fifty years. Figs. 2 and 3 represent drawings of the microscopic appearances of this growth.

No history of the case can be obtained at this time.

About a year ago Dr. F. W. Hinkel, of Buffalo, sent me a slide containing sections of a growth, from which I have had a drawing made representing the structure (Fig. 4). Later, he very kindly furnished me with the following history of the case:

Mrs. J. G. C., aged thirty-five years, in the winter of 1891 had an attack of *la grippe*. After this she began to notice the gradual increasing obstruction of the right nostril and a feeling of pressure in the right ear. During the summer she had blown a few fleshlike pieces

from that nostril and there had been a slightly purulent discharge. Her general health was fairly good, although she was never very strong. On November 22, 1892, examination showed a red papillary mass filling the right nasal chamber, bathed in pus, but not extending beyond the vestibule. A posterior rhinoscopic view could not be obtained. The tumor was movable and attached to the upper and back part of the nasal cavity. The inferior turbinated body was slightly atrophied or compressed. The growth was quickly removed by the snare, and its dimensions were found to be about $2.5 \times 1.5 \times 1$ ctm. It was a soft, friable, feathery, papillary mass. The hæmorrhage was moderate but persistent. Upon February 17, 1893, the patient returned, when the pedicle was seen to project from above the middle turbinated bone. This was removed by the snare. She was seen four days later, and again after an interval of seventeen days. She was feeling quite weak, and there was a pultaceous discharge over the vault of the pharynx. Some adhesion of the right middle turbinated bone to the sæptum had occurred. For three years and a half there was no recurrence of the symptoms, but three months later, symptoms having again appeared, the patient was examined, and it was found that the growth had recurred.

Dr. E. T. Dickerman (5), of Chicago, has lately published the report of a case which he called a nasal papilloma. The photograph of a microscopic section of the growth which accompanied the report led me to think that it probably belonged to the class referred to in this paper, and at my request he very generously placed the remaining part of the tumor at my disposal. Fig. 5 represents a drawing made from a section of one part of it, and Fig. 6 that of a section made from another part of the same growth. From Dr. Dickerman's published report of the case I copy the clinical history of it:

"*May 2, 1896.*—John O'Connor, aged sixty-two years, presented himself at my clinic complaining that his right nostril had been occluded for some time. The man was in perfect health, and his previous and family history good. He stated that nine years ago his nose had first become occluded, and that he consulted a local surgeon, who had gone blindly into the nose with forceps and curette, and had removed a large amount of 'flesh.' For about a year he was well, but for the last five years his nose had been closed. On examination I found nothing of importance externally. On looking into the right nostril I found the nose filled to the vestibule with a pinkish-gray cauliflower mass. It was not ulcerated and was movable, apparently having a small pedicle. With a probe I was able to locate its attachment to the upper and anterior part of the quadrangular cartilage to what seemed to be a small ecchondrosis. Posteriorly the choana was filled with the same growth, with the one exception that here one or two of the branches appeared œdematous and protruded through the middle meatus. The absence of ulceration, infiltration at the point of insertion, and enlargement of glands and the duration of the disease, compelled the diagnosis of sæptal papillary fibroma. With a strong pair of scissors I was able to remove a large portion of the growth with the thickened portion of the sæptum attached. The remainder was removed with the cold snare and the base cauterized. The hæmorrhage was at no time profuse, and at the present time there is no recurrence of growth."

By the drawing of Dr. Hinkel's case (Fig. 4) you will see at a glance the nature of the external configuration of the growth and of its structure—numerous finger-like processes springing from a common base. Many of them have rounded or club-shaped extremities. Examined microscopically, it is seen that these processes are made up of loose œdematous fibrous tissue covered by

one or two layers of columnar ciliated epithelium; but it is apparent that the epithelial development is a complex one. In no place is there any marked thickening of the layers, but the surface epithelium is seen to communicate and to be continuous with deep indentations and rami-

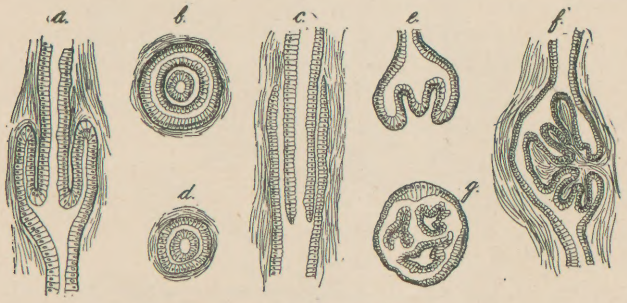

FIG. 1.—Schematic drawings from Amann.

In order to make this matter more clear I reproduce here some of the schematic drawings from Amann's book.

A cross-section of the duct *a*, at the line indicated, would give us the appearance *b*. There may be a solution in the continuity of the epithelium as in *c*; then in cross-section we have the appearance *d*. The cells of the acini may proliferate also as in *e* or in *f*, and a cross-section would give the appearance *g* or a still more complicated figure in the cross-section of *f*.

After careful study I am unable to distinguish the actual segmentation of the cells in their long axes, and I am inclined to think that some of the cells at least are formed from the underlying connective tissue, or by some other form of proliferation than segmentation through their long axes; but the comparatively slight increase in the number of layers and the convolutions of the rows of epithelium would bear out Amann's description.

fications of it into the underlying stroma. Separate rings of epithelium, ovoid, circular, or ramified in shape, and varied in extent, are seen to occupy and make up a large part of the bulk of the growth. The structure in Dr. Dickerman's case and its external configuration is almost identical with the above.

Examined with the high power one is immediately

struck with the amount of mitotic granules in the epithelial cells (Fig. 7). Evidently proliferation is rapid-

FIG. 2.—Dr. Knight's case.

ly going on, but not in such a way as to increase markedly the number of layers. By the study of these growths

FIG. 3.—Dr. Knight's case.

alone it is impossible to arrive at an understanding of the method of their pathogenesis. To do that, we must not

only study like processes in other parts of the body, where their more frequent occurrence furnishes a more ample opportunity, but we must study analogous nasal processes and this same epithelial proliferation at an earlier stage if possible.

I quote from Cornil and Ranvier (6) the following: "Among the polypi of the nasal fossæ are some which so resemble the cystic adenomata of the uterus that it is impossible to distinguish them by comparative examination with the naked eye or with the microscope." *

FIG. 4.—Dr. F. W. Hinkel's case.

Birch-Hirschfeld (7) and Weichselbaum (8), in their works on pathological anatomy, both describe and give drawings of papillary cystomata of the ovaries and of processes of chronic inflammation of the uterine mucosa which closely resemble the nasal growths under con-

* I have in my possession a good example of the same process in a glandular polypus of the rectum.

sideration, and Amann (9) has lately given an admirable description and explanation of their complicated structure. He shows that in glandular hypertrophy the cells of the ducts and of the acini of the glands proliferate by segmentation parallel to their long axes. This causes an elongation of the rows of epithelium and not an in-

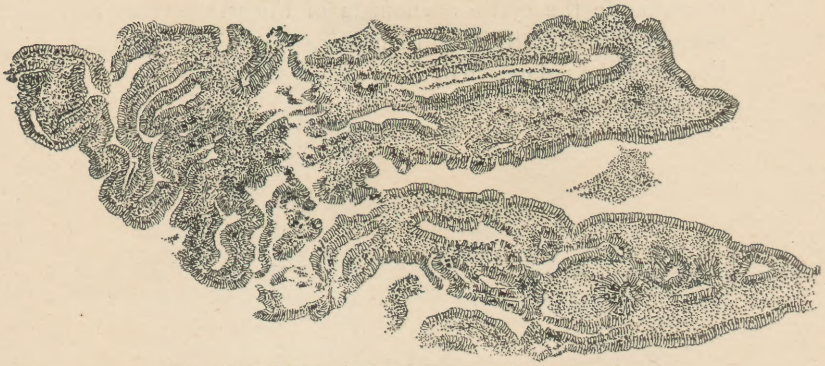

FIG. 5.—Dr. Dickerman's case, showing adenomatous tissue.

crease in the number of the layers. This necessarily leads to a convolution of the ducts or to an invagination of their walls. The walls of the acini are also doubled and folded on themselves in such a way as to increase the labyrinthian maze of epithelial rows. On cross section, therefore, we have very much the same appearance as would be presented by section through a bunch of angleworms.

Now to return to our nasal growths. On a study of the mitotic changes in the columnar cells of the surface, it may be seen that this proliferation goes on there as well as in the glands, so that the surface is raised into papillæ by the extension of the rows of epithelial cells.

This overgrowth of epithelium within the substance of the tissue of a polyp would crowd out much of the œdema and compress the stroma fibres. This is the con-

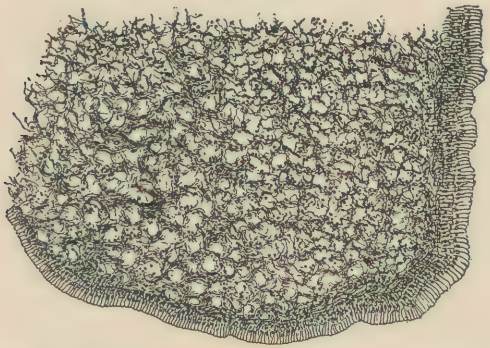

Fig. 6.—Dr. Dickerman's case, showing œdematous structure.

dition we have both in Dr. Hinkel's (Fig. 4) and in Dr. Dickerman's specimen, in that part from which Fig. 5 is taken. You will observe, however, that in the other

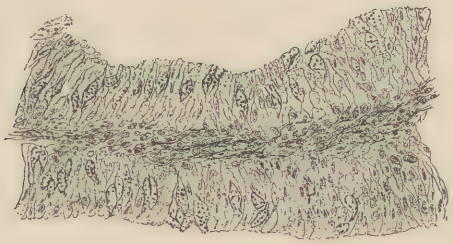

Fig. 7.—Dr. Hinkel's case, showing mitosis in the cells.

section from Dr. Dickerman's case (Fig. 6) the structure is that of an ordinary mucous polypus. The stroma in Dr. Hinkel's case is also œdematous in places, and

this must be borne in mind with the clinical fact apparent in most of the histories, that these growths have usually been found combined with polypi of the middle turbinated bone. It becomes necessary for us, therefore, to see if any pathogenic connection exists between these growths.

You may remember that several years ago I read a paper (10) before this association to show that nasal polypi are not usually myxomatous. In the light of much subsequent experience in the histological examination of morbid nasal conditions I am ready to state my

FIG. 8.—Papillary œdematous polyp.

belief that true myxoma, as it is understood by histologists, never occurs in the nose. In arriving at this conclusion I have examined, in the aggregate, nearly a hundred mucous polypi from the nose. I believe that they are the result of chronic inflammation.

It so happens that I have preserved one or more

slides of nearly all my pathological material, and in looking over those of œdematous polypi I am able to select a series of slides which show fairly well an apparent transition from the ordinary smooth form of the latter to the papillary state (Figs. 8, 9, and 10).

It is evident that other influences are at work besides epithelial proliferation to produce this papillary surface in mucous polypi. Zuckerkandl (11) says that he has observed a dilatation of the mouths of the glands produce a curvature of the surface epithelium: "The

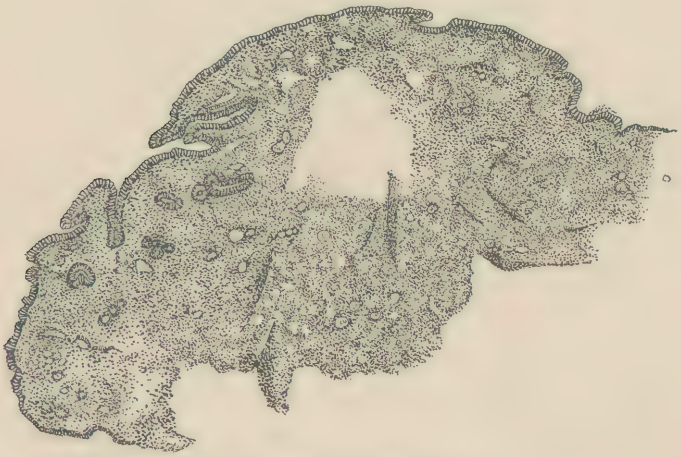

Fig. 9.—Papillary œdematous polyp.

chief ducts of the glands become dilated; the same occurs in their communicating acini, which thus among themselves and with the ducts unite to form indentations" (Buchten). On a reference to the drawings from my specimens, as in Fig. 10, at *x* you will note the phenomenon referred to by Zuckerkandl. This will doubtless

explain some of the puzzling curvatures of the epithelium within the growth (Fig. 3) and yet communicating freely with the surface, but will not suffice by itself as an explanation for the enormous development shown in the specimens of Dr. Hinkel and Dr. Dickerman. The segmentation of the glandular and surface epithelium, as

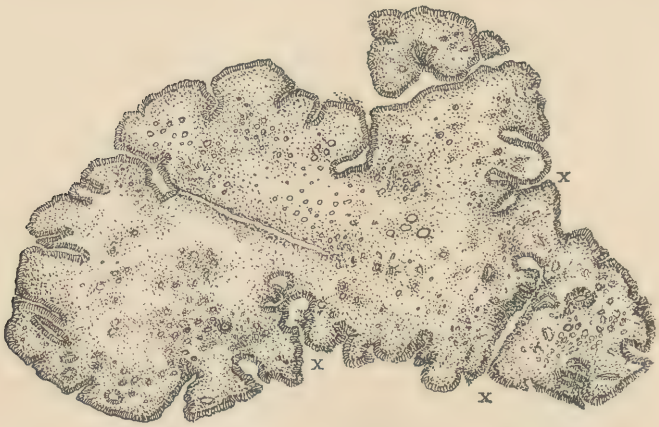

Fig. 10.—Papillary œdematous polyp. X, dilatation of gland ducts.

noted above, will supply this deficiency, but we still have another influence at work to lengthen out the papillæ of the surface, and that is the proliferation of the fibrous tissue. Abundant mitotic figures may also be seen in some of the cells of the connective tissue. This brings us to the realization of the fact that we have instances of these processes going on in other growths of the nose than mucous polypi, and in other situations than upon the middle turbinated bone. I have suggested that the dilatation and collapse of the erectile tissue determines, to some extent, the configuration of the surface in the

"mulberry hypertrophies" of the inferior turbinated bodies, but the increase in the fibrous tissue, and the dilatation of gland ducts, here, as in the œdematous growths of the middle turbinated bone, are the chief adjuvants to the epithelial proliferation in the production of a papillary surface. I have slides from growths of the inferior turbinated bodies to show as an illustration of this also. One of them (Fig. 11) shows that the

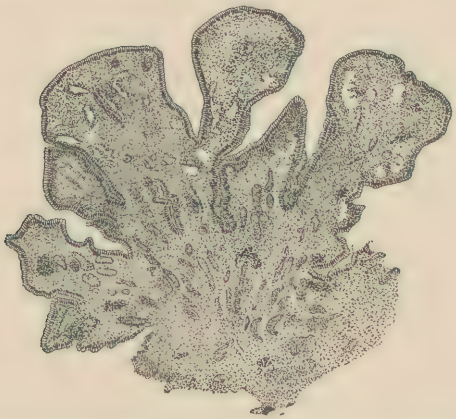

FIG. 11.—Papillary hypertrophy of the posterior end of the inferior turbinated body.

growth of the fibrous tissue is the chief element in the digitations, while the other (Fig. 12) shows also considerable epithelial hyperplasia.

Since the completion of the observations which form the subject of this paper I have received from Dr. F. E. Hopkins, of Springfield, a specimen which proves to be an adeno-carcinoma of the nose. In many places it is impossible to distinguish the structure from that found in Dr. Hinkel's and in Dr. Dickerman's cases, and it is

therefore impossible to say with certainty that there are not, in unexamined parts of their growths, carcinomatous elements which are not to be found in the parts submitted to me for examination. Dr. Hopkins, I believe, is to report his case at this meeting, and you will see from the drawing of the microscopic appearances the resemblance of the structure to that of those growths of which I have been speaking.

Fig. 12.—Papillary hypertrophy of the inferior turbinated body approaching an adenomatous condition.

Thus you will see the gradations in development from the ordinary mucous polypus through a benign adenomatous growth to a malignant one. In the mucous polyp and in the adenoma we have the results, I believe, of an inflammatory process. At first we have the effusion of serum into the tissues from the blood-vessels. Afterward, or *pari passu* with it, we have the proliferation of the fibrous tissue. This makes an œdematous mucous polyp. Then, in these rare adenomatous and papillary growths we have the proliferation of the glandular and surface epithelium.

The tendency of adenomatous growths to become sarcomatous or carcinomatous is well known, and has been long recognized. This brings us to the ætiology of carcinoma and sarcoma, and into that I am not capable of entering.

We know that epithelial proliferation of another type produces the fibroma papillare or true papilloma of Virchow, and that this also has some affinities with chronic inflammation, as exemplified in the pachydermia verrucosa of the larynx. The tendency to papillary formations is seen not only in the epithelium covering fibrous tissue, but, as I have lately had occasion to observe, lymphoid tissue of the faucial tonsil is occasionally thrown into the digitations covered by proliferated squamous epithelium, which give to the surface a papillary vegetating appearance.

In fact, so close a relation exists between the products of inflammation and many of the various forms of benign tumors that I must acknowledge my inability to draw any practical line between them. So far as my observation goes in reading works on pathology, this can only be done to the satisfaction of those who know nothing of the subject, but it is a great convenience to the teachers of students.

In presenting this paper I desire to express my sense of great obligation to the gentlemen who have so generously placed their pathological material at my disposal for study.

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A WEEKLY REVIEW OF MEDICINE.

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FRANK P. FOSTER, M.D.

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